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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,502	01/25/2002	Leon Chia-Liang Lin	01 P 15968 US (INFI 2322)	4351
29393	7590	01/10/2006	EXAMINER	
ESCHWEILER & ASSOCIATES, LLC NATIONAL CITY BANK BUILDING 629 EUCLID AVE., SUITE 1210 CLEVELAND, OH 44114			WONG, LINDA	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/057,502

Applicant(s)

LIN ET AL.

Examiner

Linda Wong

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 19-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-8, 9-14, 19-233 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Arguments***

1. Applicant's arguments with respect to claims 1-14, 19-33 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Objections***

2. **Claims 1-12, 19-23, 24-26, 27, 28-33** are objected to because of the following informalities:
  - a. **Claim 1, 9, 10, 19, 24, 27, 28** recites limitations such as "second data elements" without reciting "first data elements." The limitations should have continuous sequential variable names. For example, claim 1, lines 4 and 5, recite the limitations "a first PAM signal" and then "a second PAM signal".
  - b. **Claim 10, lines 21 and 34**, recites the limitation of a "second AGC" and a "second gain control". Based on the diagram, the "second gain control" is different from the "second AGC". It is suggested by the examiner to change the phrase "second gain control" to "third gain control" or "gain control components" to differentiate between the two phrases.
  - c. **Claims 11-12** are objected to as being dependent upon an objected base claim.
  - d. **Claims 13-14** are objected to as being dependent upon an objected base claim.
  - e. **Claims 20-23** are objected to as being dependent upon an objected base claim.
  - f. **Claims 22-26** are objected to as being dependent upon an objected base claim.
  - g. **Claims 29-33** are objected to as being dependent upon an objected base claim.Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1,5** are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (Fig. 1-2) in view of Hart et al (US Patent No.: 6577196).

a. **Claim 1**, the admitted prior art discloses an apparatus comprising an amplifier (Fig. 2, label 32), an analog-to-digital converter (A/D) (Fig. 2, label 36), a first automatic gain control (AGC) (Fig. 2, label 54). Although the admitted prior art does not disclose a first AGC for determining a number of second data elements generated per unit of time having values within a first range and for adjusting the first gain when the determined number falls outside a second range, Hart et al discloses an automatic gain control comprising a peak value detector for detecting the amplitudes, a comparator for comparing the amplitudes with first range and a second range, and a control unit for increasing and decreasing the gain when the amplitudes are above or below the first and second range. (Fig. 1, labels 16, 20 and 26, Col. 3, lines 59-67 and Col. 4, lines 1-1 and lines 32-50) It would be obvious to one skilled in the art to replace the AGC found in the admitted prior art with the AGC disclosed by Hart et al to adjust the gain at very high degree of precision easily so a clock recovery circuit

can recover data from a received signal containing small amounts of error.

(Col. 1, lines 11-34 and lines 51-67 and Col. 2, lines 1-2)

- b. **Claim 5**, the admitted prior art discloses a digital signal processing (DSP) (Fig. 2, labels 38, 42, 44, 45), a slicer (Fig. 2, label 46), and a second AGC means (Fig. 2, label 56).
- 4. **Claims 2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (Fig. 1-2) in view of Hart et al (US Patent No.: 6577196) and further in view of Wu et al (US Patent No.: 6870891).
  - c. **Claim 2**, Although the admitted prior art and Hart et al does not disclose an AGC comprising a counter for counting the number of data elements above a threshold, Wu et al discloses an AGC for adjusting the gain based on a count of the number of data elements above a threshold. (Fig. 2, Col. 2, lines 44-67 and Col. 3, lines 24-56) It would be obvious to one skilled in the art to use the AGC disclosed by Wu et al to produce a quick gain with zero latency.
  - d. **Claim 3**, Although the admitted prior art does not disclose the absolute value of the data, a counter and a first control signal to the first counter, Wu et al discloses computing the absolute value of the data, comparing it to a threshold and increase/decreasing a count value (Fig. 2, labels 31, and 34) and resetting the counter (Fig. 2, label CLK to label 34). It would be obvious to one skilled in the art to use the AGC disclosed by Wu et al to produce a quick gain with zero latency.

Art Unit: 2634

- e. **Claim 4**, Although the admitted prior art does not disclose a slicer, Wu et al discloses a counting method in which the counter increases and decreases based on whether the elements are above or below a threshold. It would be obvious to one skilled in the art to use the AGC disclosed by Wu et al to produce a quick gain with zero latency.

### ***Allowable Subject Matter***

5. **Claims 6-8** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. **Claims 9,10,19,24,27,28** are allowable if rewritten to overcome objections.
7. **Claims 11-14,20-23,25-26,29-33** are objected to as being dependent upon a rejected base claim, but would be allowable if the **base claims 9,10,19,24,27,28** is rewritten to overcome the objections.

### ***Conclusion***

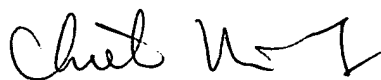
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2634

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Linda Wong

A handwritten signature in black ink, appearing to read 'Chieh M. Fan', with a stylized flourish at the end.

CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER